

PUNISHMENT: A PRIMARY PROCESS?

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Lerman and Vorndran have undertaken a heroic task. They have reviewed the human and nonhuman basic behavior-analytic research and the applied behavior-analytic research on the effects of punishment and then made recommendations for the use of punishment to reduce problem behavior. They demonstrate that the effects of punishment vary as a function of other prevailing conditions, such as past and concurrent reinforcement contingencies. Their review is extensive, thoughtful, and well balanced. Most of the recommendations that they make for treatment seem sound. The article provides an excellent review of the literature and makes many thoughtful recommendations for treatment.

However, as any discussion article should, it raised a number of issues. The first issue relates to definition as presented in their first sentence: "Punishment is generally defined as an environmental change contingent on behavior that produces a decrease in responding over time (Michael, 1993)" (p. 431). That definition is elegant. It is short, direct, and parallels the definition of reinforcement. However, there is also Skinner's (1953) less elegant and somewhat speculative conception of the effects of punishment as secondary effects. Skinner's conception states that there are three ways in which a stimulus can reduce the rate of a response. First, the stimulus may elicit responses that are incompatible with the punished response. Second, the stimulus may result in conditioned emotional responses that are incompatible with the response (conditioned suppression). Third, operant responses that are incompatible with the punished response

result in escape or avoidance of the punishing stimulus. Hence, the reduction of the punished response comes about because of the strengthening of other responses. Now, this is really only a hypothesis, and one that is probably difficult to test directly. However, I see nothing in the current article that is incompatible with Skinner's conception. Moreover, the reported results for the two articles by Fisher and colleagues (Fisher, Piazza, Bowman, Hagopian, & Langdon, 1994; Fisher, Piazza, Bowman, Kurtz, et al., 1994) are certainly compatible with Skinner's conception of punishment as a secondary process dependent on escape and avoidance responses. Lerman and Vorndran report that these studies found that the events that resulted in the greatest amount of escape and avoidance responses were also the events that were the most effective punishers. Lerman and Vorndran also cite Fisher et al. (1993) and conclude that "punishment may enhance the efficacy of reinforcement for establishing appropriate behavior that competes with or replaces inappropriate behavior, an outcome that may in turn increase the likelihood that punishment can be withdrawn" (p. 450). If the effects of punishment are primary effects, there seems to be little reason to expect that punishment of one response would increase the efficacy of reinforcement for establishing other responses. However, if the effects of punishment are secondary to escape and avoidance, then a second source of reinforcement is provided for responses incompatible with the punished response—namely, negative reinforcement. In fact, if the effects of punishment are a function of escape and avoidance, then no additional reinforcement is required to establish new responses that are incompati-

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ble with the punished response. If one desires to establish appropriate incompatible responses, one need only have a way of ensuring that the responses that are incompatible with the punished response are appropriate. That, of course, can readily be accomplished through positive reinforcement of the appropriate response. In fact, if the effects of punishment are secondary to escape and avoidance, then once the appropriate responses are established, no positive reinforcement should be required to maintain that response. Only the occasional presentation of the aversive stimulus should maintain the appropriate response. When I first began thinking of these two different conceptions of punishment, they both seemed to fit the data equally well. Moreover, I was not sure that any experiments could be developed that would discriminate between the two conceptions. I still believe definitive studies demonstrating which conception more accurately fits the data will be difficult. However, studies aimed at exploring the issue more fully could have practical implications. For example, if it turns out that the suppressive effects of punishment are secondary to escape and avoidance, then the search for nonintrusive punishers may be a vain endeavor.

The second issue concerns the implications that little is known about punishment and that more research is needed to fill gaps. As I read the discussions of basic and applied research, I gained the impression that the authors believed that almost nothing is known about punishment and that research was needed on nearly every facet of punishment. They frequently point out apparently contradictory findings in the basic and applied research. Perhaps the general tenor of the article is well illustrated by the following statement from the first paragraph: "Few strategies have been identified for enhancing the effectiveness of less intrusive punishment procedures, for attenuating undesirable as-

pects of punishment, or for successfully fading treatment with punishment" (p. 431). Yet, I wonder if there are not certain general principles that if systematically applied would explain certain apparently paradoxical findings in the basic and applied literature, predict future outcomes of basic and applied research on punishment, and make sound recommendations regarding treatment. Incidentally, I believe that the authors' excellent recommendations at the end of each section suggest that much more is known about the effects of punishment and its interaction with other variables than their discussions of basic and applied research suggest. Perhaps I am assuming too much, but I believe that if all other factors are equal, the basic and applied literature supports the following statements.

1. Punishment will produce a greater reduction in response rate if it is delivered on a continuous schedule than if it is delivered intermittently.

2. Punishment will produce a greater reduction in response rate if it is delivered immediately than if it is presented after a delay.

3. Punishment will produce a greater reduction in response rate if the schedule of reinforcement for the target response is decreased or eliminated than if reinforcement is maintained on a rich schedule.

4. Punishment will produce a greater reduction in response rate if an unpunished alternate response is available that is reinforced on a schedule equal to or greater than the schedule of reinforcement for the punished response than if no such alternate response is available.

5. A stimulus is more likely to function as a punisher if it also serves as a signal for nonreinforcement or a decrease in reinforcement than if it signals an increase in the density of reinforcement.

The third issue is really a question. The authors suggest that additional research on the effects of punishment will improve the

treatment of problem behaviors. That is, perhaps, true. However, a situation in which improved punishment techniques would presumably improve treatment involves cases in which the variables that control the undesirable behavior cannot be identified or controlled. In a majority of the situations in which the authors made suggestions for clinical treatment, in addition to punishment they recommended reducing the schedule of reinforcement of problem behavior or increasing the schedule of reinforcement for other behaviors. I strongly agree with those suggestions. Moreover, they note, with regard to maintenance of punishment effects, that unless the punishment is severe, the effects of punishment are not maintained once punishment is discontinued, and sometimes the effects are not maintained even if the punishment procedure is continued. Because modification of reinforcement schedules seems so important to the suppression of behavior and the maintenance of that suppression, is the search for more effective punishers the most fruitful direction? Is it not possible that conducting research aimed at discovering these unknown and uncontrolled variables might be the more fruitful direction for research?

Although the authors clearly advocate ad-

ditional research on punishment and the use of punishment in treatment of problem behaviors, they give a very well-balanced account of the potential limitations of punishment in the section on maintenance, generalization, and indirect effects. I speculate that readers will find the article educational and stimulating.

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